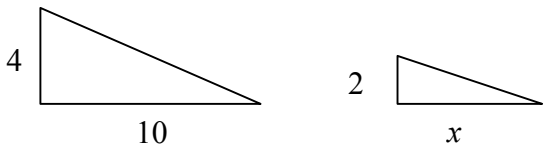
Grade 10 Academic Mathematics
Ontario Canada Curriculum
MathWiz Practice Exam 1

Instructions:

- Provide solutions where needed with a final statement
- Pay attention to degree of accuracy required
- Check your work when finished

Part A

Place your answers only in the space provided.

		Answers
1.	Determine the slope of the line $3x-2y-8=0$.	
2.	Determine the equation of the vertical line passing through A (5, 11).	
3.	Determine the distance between the points X (-1, 5) and Y (4, 17).	
4.	Determine the midpoint between P(-2, 7) and Q (8, 21).	
5.	Determine if (1, –1) is on the line *3x – 4y – 7 = 0*?	Yes No Circle one
6.	State the vertex of $y=2(x-3)^2+5$.	
7.	Determine the y-intercept for the parabola $y=-(x+2)^2-3$.	
8.	Determine the first 3 steps for the quadratic function $y=3(x-2)^2-1$.	
9.	Factor $4x^2-25$.	
10	Determine the roots of $(x-3)(x+2)=0$.	
11.	Determine the value of x if the triangles below are similar.  	

Part B. **Show full solutions.**

1. Solve the system of equations below algebraically and verify your answer . (show a check).

$3x-2y=9$

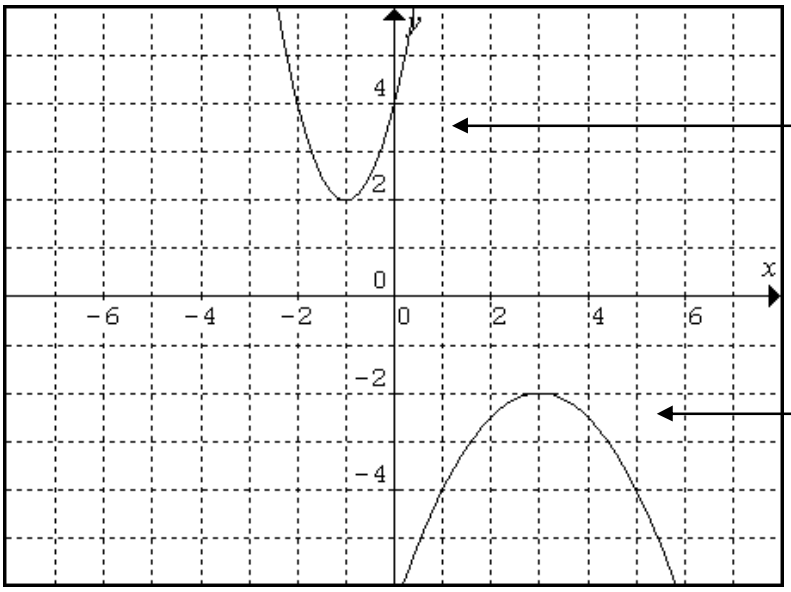
$2x+3y=19$

2. A retailer is blending together peanuts and cashews to create a mixture. If the peanuts sell for 1.25/kg and cashews for $2.79/kg, how many kg of each should he use to make a 100 kg of a mixture that sells for $1.89/kg ?

<u>Set up the equations required to solve this problem but do not solve.</u>

Let p = number of kg of peanuts c = number of kg of cashews

3. Two parabolas are shown in the graph. Write the equation of each in vertex form.



a) _____

b) _____

c) Graph the quadratic function $y=3(x+4)^2-5$ on the grid.
Use at least 3 points.

4. Solve the following quadratic equations algebraically. Leave as exact answers.

a) $x^2 - x - 2 = 0$

b) $6x^2 + 7x - 3 = 0$

c) $2x^2 - 3x - 7 = 0$

5. Determine the vertex for the parabola $y = 2x^2 + 8x + 11$ algebraically.

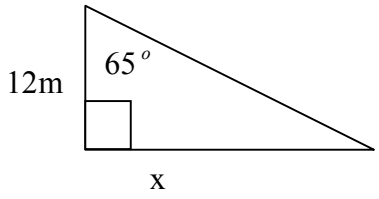
6. A ball is thrown into the air from a height of 5 metres such that its height is given by the equation $h = -5t^2 + 30t + 5$.

a) Algebraically determine the maximum height of the ball and how lon it will take to get there.

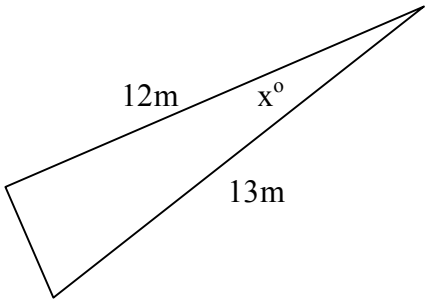
b) When will the ball obtain a height of 30 m?

7. Solve for the unknown (x) in each triangle below. Answers to 1 decimal place.

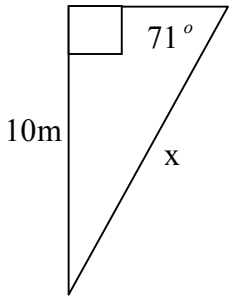
a)



b)

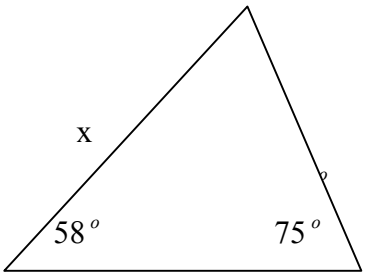


c)

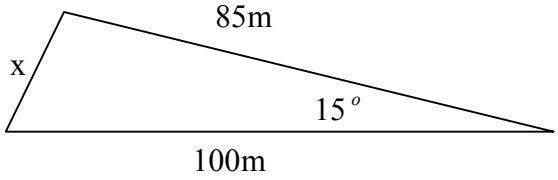


8. Determine the unknown in each of the triangles below.
Answers to one decimal place.

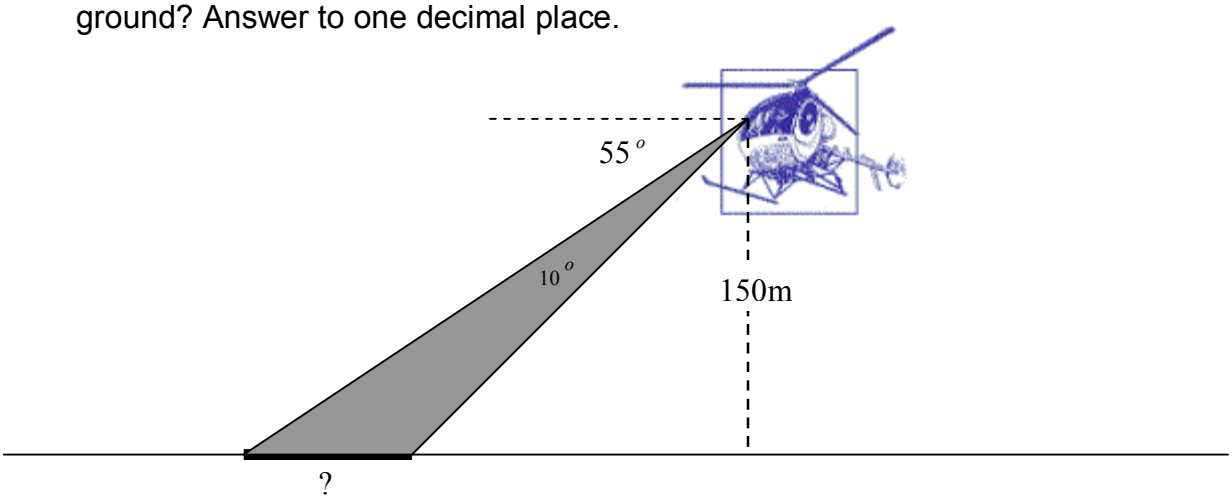
a)



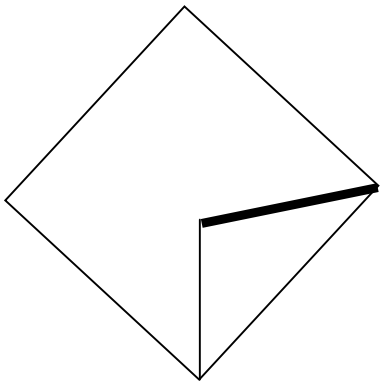
b)



9. A searchlight is mounted at the front of a search-and-rescue helicopter. The pilot is flying the helicopter 150 m above the ground and the beam is angled at 55° to the horizontal. The beam spreads out at an angle of 10°. How wide is the beam on the ground? Answer to one decimal place.



10. A baseball diamond is a square that is about 30 m on a side. The pitcher's mound is about 20 m from home plate on the diagonal from home plate to second base. How far does the pitcher have to throw the ball to first base?
Answer to one decimal place.



Answers:

Part A

1. $m=\frac{3}{2}$
2. $x=5$
3. $d=13$
4. $(3,14)$
5. *Yes*
6. $(3,5)$,
7. -7,
8. $3,9,15$,
9. $(2x+5)(2x-5)$
10. $x=3,-2$
11. $x=5$

Part B

1. $(x,y)=(5,3)$
2. $p+c=100 \quad 1.25p+2.79c=1.89(100)$
3. *a)* $y=2(x+1)^2+2$ *b)* $y=-\frac{1}{2}(x-3)^2-2$ *c) vertex* $(-4,-5)$ *opening up steps* $3,9,15$
4. *a)* $x=2,-1$ *b)* $x=-\frac{3}{2},\frac{1}{3}$ *c)* $x=\frac{3\pm\sqrt{65}}{4}$
5. *vertex at* $(-2,3)$
6. *a)* max *height is* 50 *metres at* 3 *s* *b)* $t=1$ *and* $5s$
7. *a)* 25.7 *b)* 22.6^o *c)* $10.6m$
8. *a)* $132.1m$ *b)* $28.4m$
9. $35.1m$
10. $21.2m$